Functional Mathematics Standards

(Adopted 6.28.99)

Table: Functional Mathematics Standards

STANDARD 1: Number Sense
Students develop number sense and use numbers and number relationships to acquire basic facts, to solve a wide variety of real-world problems, and to determine the reasonableness of results.

STANDARD 2: Data Analysis and Probability
Students use data collection and analysis, statistics, and probability to make valid inferences, decisions and arguments and to solve a variety of real-world problems.

STANDARD 3: Patterns, Algebra and Function
Students use algebraic methods to explore, model and describe patterns, relationships and functions involving numbers, shapes, data and graphs within a variety of real-world problem solving situations. *(Note: No separate Functional level performance objectives indicated.)*

STANDARD 4: Geometry
Students use geometric methods, properties and relationships as a means to recognize, draw, describe, connect and analyze shapes and representation in the physical world. (*Note: No separate Functional level performance objectives indicated.)*

STANDARD 5: Measurement and Discrete Mathematics
Students make and use direct and indirect measurement, metric and U.S. customary, to describe and compare the real world and to prepare for the study of discrete functions, fractals and chaos that have evolved out of the age of technology.

STANDARD 6: Mathematical Structure/Logic
Students use both inductive and deductive reasoning as they make conjectures and test the validity of arguments. (*Note: No separate Functional level performance objectives indicated.)*

MATHEMATICS STANDARDS

STANDARD 1: NUMBER SENSE

Students develop number sense and use numbers and number relationships to acquire basic facts, to solve a wide variety of real-world problems, and to determine the reasonableness of results.

FUNCTIONAL (Ages 3-21)

Within the functional context of home, school, work, and community environments, students know and are able to do the following:

- **1M-FS1. Develop an understanding of number meanings and relationships**

  PO 1. Demonstrate number concepts one, two and three (e.g., pick one from a choice of two, hand out two milks to each child at lunch, use two plastic bags when bagging bottled grocery items)
  PO 2. Demonstrate concept of 'more,' 'one more'
  PO 3. Communicate age (e.g., showing number of fingers to represent age, state age, show identification card which communicates age/date of birth)
  PO 4. Read written numerals 0-9
  PO 5. Demonstrate concept of 'none'

- **1M-FS2. Demonstrate one-to-one correspondence between elements in collections (sets) (e.g., nine blocks is as many as nine ducks)**

  PO 1. Match groups having equal numbers of objects up to 100
  PO 2. Using a model of sets up to ten, complete partial sets (e.g., determine how many more or less are needed)
  PO 3. Distribute or indicate distribution of items into equal sets (e.g., one milk carton/ student, pass out one pencil or workbook to each student at beginning of class, one place setting per person, divide cards for any number of players)

- **1M-FS3. Use manipulatives (concrete materials) to count, order and group**

  PO 1. Count to ten using concrete objects (e.g., count out treats, student supplies for group art activity, gets ten books, get five cases of vegetables to stock shelves)
  PO 2. Count out requested number of objects up to ten with an example (e.g., set of objects, number line)
  PO 3. Count out requested number of objects up to ten without an example
  PO 4. Match number of objects to number symbol
  PO 5. Locate object of given ordinal number using left to right progression in groups of up to ten (e.g., take or indicate the first/last chair, third child, or second book)

- **1M-FS4. Identify and use money (bills/coins) in real world situations**

  PO 1. Match coins to purchase an item (e.g., use cue card with visual or tactile representation of coins when using vending machines)
  PO 2. Count out requested number of dollar bills up to ten with an example (e.g., number line)
  PO 3. Identify amount of purchase (e.g., by looking at register, listening to clerk or asking *How much do I owe*?)
  PO 4. Given a purchase price, student determines if s/he has a sufficient amount of money to pay for the item with or without a visual/tactile strategy (e.g., given a specified amount of money, use a number line, next dollar, or the calculator strategy and newspaper sales ads to determine whether there is enough money for a purchase or to buy lunch)

STANDARD 2: DATA ANALYSIS AND PROBABILITY

Students use data collection and analysis, statistics, and probability to make valid inferences, decisions and arguments and to solve a variety of real-world problems.

FUNCTIONAL (Ages 3-21)

Within the functional context of home, school, work, and community environments, using assistive technology, students know and are able to do the following:

- **2M-FS1. Compare and sort objects by their physical attributes**

  PO 1. Show curiosity about objects and their unique characteristics
  PO 2. Group objects as same/different
  PO 3. Using one-to-one correspondence, match by each of the following characteristics: shape, size, color, texture, weight, and/or length
  PO 4. Arrange objects according to size (e.g., organize measuring cups or mixing bowls by size)
  PO 5. Group objects by one to three characteristics (e.g., bagging groceries hard/heavy, soft/light; sort medicine big red capsule *vs.* small blue tablet)
  PO 6. Sort by categories (e.g., food, tools, clothing)

- **2M-FS2. Create concrete displays of data; understand and use elementary tables, graphs and charts to make decisions**

  PO 1. Demonstrate understanding of daily activity schedule by following a sequence (e.g., follow picture directions, tangible schedule boxes)
  PO 2. Demonstrate understanding of calendars including days, yesterday, today, tomorrow, weeks, months and years (e.g., by recording special events, work schedule, mark days off on calendar and determine how many days to holiday, birthday, doctor's appointment)
  PO 3. Create a visual or tactile report or chart to communicate information or data (e.g., weight chart, chart of classroom projects, classroom routines, and personal management)
  PO 4. Use a tally system to keep track of objects or events (e.g., use a tally system to determine how many times you raised your hand, to do inventory of supplies available, to keep score of classroom games, to keep track of number of cans of water added to juice mixture)

- **2M-FS3. Use number skills to solve a variety of real-world problems**

  PO 1. Use counting skills to solve problems (e.g., count number of chairs at table and get enough place settings/napkins)
  PO 2. Follow directions with ordinal numbers (e.g., meet you on the 4^{th} floor, get off at the second bus stop, go to the third door on the right)
  PO 3. Determine how many more/less are needed (e.g., washing machine requires six quarters for wash cycle--student has two quarters, how many more are needed? Student has eight quarters, how many will be left after putting six quarters in the washing machine?)
  PO 4. Use computation skills to solve problems (e.g., checkbook balances, using a calculator, compute costs of purchases when shopping)
  PO 5. Follow established budget to manage personal/household expenses (e.g., groceries, clothing, bills)

STANDARD 3: PATTERNS, ALGEBRA AND FUNCTIONS

Students use algebraic methods to explore, model and describe patterns, relationships and functions involving numbers, shapes, data and graphs within a variety of real-world problem solving situations.

FUNCTIONAL (Ages 3-21)

A Functional level is not indicated for this standard. The IEP Team will determine the appropriate goals and objectives from this area based on individual student needs.

STANDARD 4: GEOMETRY

Students use geometric methods, properties and relationships as a means to recognize, draw, describe, connect, and analyze shapes and representation in the physical world.

FUNCTIONAL (Ages 3-21)

A Functional level is not indicated for this standard. The IEP Team will determine the appropriate goals and objectives from this area based on individual student needs.

STANDARD 5: MEASUREMENT AND DISCRETE MATHEMATICS

Students make and use direct and indirect measurement, metric and U.S. customary, to describe and compare the real world and to prepare for the study of discrete functions, fractals and chaos that have evolved out of the age of technology.

FUNCTIONAL (Ages 3-21)

Within the functional context of home, school, work, and community environments, students know and are able to do the following:

- **5M-FS1. Use measurement in real-world situations**

  PO 1. Demonstrate understanding of more and less
  PO 2. Match number name to a given quantity (e.g., get three apples at the grocery store) as depicted through concrete or pictorial representation
  PO 3. Demonstrate ability to use measurement tools (e.g., measure ingredients for cooking using one cup measure, teaspoon and tablespoon, measure appropriate amounts of pet food, cleaning solutions, detergent for laundry)
  PO 4. Use temperature measurement to make decisions (e.g., adjust bath water, determine presence of a fever, select appropriate clothing, and select appropriate stove and/or oven temperature, adjust thermostat for comfort and economy)
  PO 5. Tell time to the hour/half hour using analog or digital clocks

PO 6. Use time measurements to make decisions (e.g., set alarm clock, and set timer for cooking, use clock to follow a work schedule or determine if early or late for an appointment, estimate quantity of time needed to complete an activity such as getting ready for work, washing hair)

STANDARD 6: MATHEMATICAL STRUCTURE/LOGIC

Students use both inductive and deductive reasoning as they make conjectures and test the validity of arguments.

FUNCTIONAL (Ages 3-21)

A Functional level is not indicated for this standard. The IEP Team will determine the appropriate goals and objectives from this area based on individual student needs.